

# Notice of Allowability

Application No.

10/761,641

Examiner

Chukwuma O. Nwaonicha

Applicant(s)

YANG ET AL.

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1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/2/06.
2. ☒ The allowed claim(s) is/are 80-115 (now renumbered 1-36, respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
JOHANN RICHTER  
SUPERVISORY PATENT EXAMINER  
GROUP 1200

***DETAILED ACTION***

***Current Status***

1. This action is responsive to Applicants' amendment of 2 February 2006.
2. Receipt and entry of Applicants' amendment is acknowledged.
3. Claims 80-115 are under active consideration in the instant application.

***Allowed Claims***

Claims 80-115 are allowable over the prior art of record.

***Reason For Allowance***

The following is an examiner's statement of reasons for allowance: Applicants claim a process for oxidation of alkylbenzenes to produce hydroperoxides comprising: providing an oxidation feed consisting essentially of an organic phase, said oxidation feed comprising one or more alkylbenzenes and a quantity of neutralizing base having a pH of from about 8 to about 12.5 in 1 to 10 wt. % aqueous solution, said quantity of neutralizing base being effective to neutralize at least a portion of acids formed during said oxidation, said oxidation feed comprising up to an amount of water effective to increase neutralization of acids formed during said oxidation without forming a separate aqueous phase; exposing said oxidation feed to oxidation conditions effective to produce an oxidation product stream comprising one or more product hydroperoxides; wherein all the other variables are as defined in the claims. The process was neither found to be obvious nor anticipated by the prior art of record.

The closest prior arts are Fulmer et al., {US 6,465,695}, Zakoshansky et al, {US 5,767,322} and Colvin, {US 4,431,849}. Fulmer et al. teach a method for manufacturing

cumene hydroperoxide comprises reacting cumene and oxygen in the presence of a water phase comprising aqueous ammonia, and in the absence of an additive comprising an alkali or alkaline earth metal, to form cumene hydroperoxide while Zakoshansky et al. teach a greater efficiency in a water-alkaline emulsion cumene oxidation process using a cascade of reactors obtained by splitting the reactor cascade into 2 stages with the first stage utilizing  $\text{NH}_4\text{NaCO}_3$  as the active carbonate in the stage containing less than 18% by weight cumene hydroperoxide and using  $\text{Na}_2\text{CO}_3$  as the active carbonate in the stage containing more than 18% by weight cumene hydroperoxide. On the other hand, Colvin teaches a process for preparing a methyl phenol from a tertiary hydroperoxide in an oxidation product of an alkylbenzene. The process comprises the reaction of alkylbenzenes, neutralizing base (ammonia, ammonia hydroxide, alkali metal hydroxide and alkali metal carbonate) and oxidizing agent to yield the desired product. However, applicants argue that the present invention relates to a process for oxidation of alkylbenzenes to produce one or more product hydroperoxides comprising exposing an oxidation feed to oxidation conditions, **the oxidation feed consisting essentially of an organic phase**, the oxidation feed comprising one or more alkylbenzenes, **an amount of water which is insufficient to form a separate aqueous phase**, and a quantity of **alkali metal base** which is insufficient to precipitate out of solution during oxidation but effective under the oxidation conditions to produce an oxidation product stream comprising **a total yield of one or more product hydroperoxides which is greater than that produced in the absence of the alkali metal base**. Applicants contend that none of the prior art

references will lead one of ordinary skill to practice the claimed invention since they do not teach a process wherein the oxidation feed consist essentially of an organic phase and the amount of water present is insufficient to form a separate aqueous phase.

Applicants' argument is found persuasive because these differences are not readily apparent and would not have been suggested to one of ordinary skill.

A search of the prior art failed to uncover any reference that teaches or motivates one of ordinary skill to disclose a process for oxidation of alkylbenzenes to produce hydroperoxides as claim by applicants.

**All claims (80-115) are allowed.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman k. Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

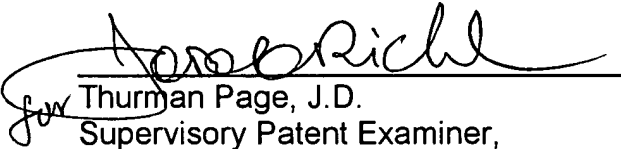
you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Chukwuma O. Nwaonicha, Ph.D.

Patent Examiner

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for Thurman Page, J.D.  
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